

# **EXHIBIT**

## **36**

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MASSACHUSETTS**

**BRAUN GMBH,**

***Plaintiff,***

**V.**

**RAYOVAC CORPORATION,**

***Defendant.***

**Civil Action No. 03-1248-WGY**

## SECOND EXPERT REPORT OF SAMUEL R. PHILLIPS, PE

1. I am an independent consulting engineer. I have been retained as an expert in this case by Rayovac Corporation ("Rayovac") to opine as to whether certain of Braun GmbH's patents have been infringed by any Rayovac products. Specifically, I have been asked to review U.S. Patent Nos. 5,649,556 ("the '556 patent") and 5,711,328 ("the '328 patent") (collectively "the patents in suit") and to compare the asserted claims of the patents in suit to Rayovac's accused products..
- I. BACKGROUND AND QUALIFICATIONS**
2. My background and qualifications are attached as Tab 1.
  3. I received the degrees of Bachelor of Science in Engineering and Master of Science in Engineering from the California Institute of Technology ("Caltech").

## I. BACKGROUND AND QUALIFICATIONS

2. My background and qualifications are attached as Tab 1.
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**Attorneys' Eyes Only**

4. My industry experience pertinent to this litigation is presented at Paragraph 4 of my First Expert Report, and I incorporate that presentation here.
5. Since 1985, I have been an independent consulting engineer. During that time, I have used my education and experience to assist over 120 clients on a wide variety of topics.
6. I have provided testimony in other matters over the past 4 years. These matters are listed at Tab 1.
7. My compensation is \$425.00/hour through FTI/Techlicon.

## **II. SCOPE OF STUDY AND OPINION**

### **A. Documents And Information Considered In Forming Opinions**

8. The following opinions and analyses are based upon a review of the patents in suit and the file histories for the patents in suit.
9. A list of the information I considered in forming the opinions in this report is attached as Tab 2. Exhibits cited here that were not cited and attached to my First Expert Report of May 23, 2005 are attached following Tab 3.

### **B. Exhibits To Be Used As A Summary Or Support For The Opinions**

10. At trial, I expect to rely upon materials and documents produced in this litigation and various other documents that the parties have exchanged, such as interrogatory responses. I also may rely upon visual aids and demonstrative exhibits that I may prepare or have prepared including, by way of example, figures and excerpts from the patents in suit and/or prior art patents, claim charts, deposition testimony, diagrams and other graphical presentations describing the technology relevant to the patents in

suit and the design, operation and functions of the patents in suit and/or prior art patents. These materials may include or involve one or more of the items identified on Tab 3.

**C. Questions Asked**

11. I have been asked to consider and provide my opinions in response to the following questions:

- a. Does each and every limitation of the asserted claims of the '556 patent meet Rayovac's accused products? I understand that, to infringe a patent claim literally, all claim limitations must "read on" an accused product or process.
- b. Does each and every limitation of the asserted claims of the '328 patent meet Rayovac's accused products? I understand that, to infringe a patent claim literally, all claim limitations must "read on" an accused product or process.
- c. Assuming that all of Dr. Nayfeh's opinions regarding the '556 patent are correct (and they are not), could Rayovac redesign its products so as not to infringe the asserted claims of the '556 patent? I understand that a patentee cannot claim lost profits if there are "acceptable non-infringing substitutes."
- d. Assuming that all of Dr. Nayfeh's opinions regarding the '328 patent are correct (and they are not), could Rayovac redesign its products so as not to infringe the asserted claims of the '328 patent? I understand that a patentee cannot claim lost profits if there are "acceptable non-infringing substitutes."

**D. Summary of Opinions**

12. In my opinion, Rayovac has not infringed any asserted claims of the '556 patent. For reasons discussed further below, no accused Rayovac product meets each and every limitation of the asserted claims. For claim 1 (and all the claims that depend from it), Rayovac's products do not have the following limitations as construed by the Court or agreed to by the parties:
- (1) "a cleaning fluid container separate from the cradle structure for

holding a cleaning fluid,” (2) “a cradle structure adapted to receive therein the shaving head,” (3) “a fluid feed mechanism which feeds the cleaning fluid after it passes through the filter to the cradle structure during cleaning,” and (4) “said container and filter being separable from the cradle structure as a unit.” Moreover, as the term should be properly construed, the limitation “a cradle structure adapted to receive therein the shaving head” does not read on Rayovac’s accused products. Further, for claim 2, the limitation “wherein the cleaning fluid container is comprised of two chambers, one chamber serving to hold the cleaning fluid, the other chamber being configured as the filter” does not read on Rayovac’s accused products. Moreover, for claim 6, the limitation “wherein the cleaning fluid container includes ports through which cleaning fluid passes in and out of the cleaning fluid container” does not read on Rayovac’s accused products.

13. In my opinion, Rayovac has not infringed any asserted claims of the ‘328 patent. For reasons discussed further below, no accused Rayovac product meets each and every element of the asserted claims. For claims 11, 12, 14 and 18, as construed by the Court or agreed to by the parties, Rayovac’s products at least do not have the limitations (1) “a cradle structure adapted to receive a shaving head of a shaving apparatus” or (2) “a feed device for feeding cleaning fluid to said cradle structure.” Moreover, as the term should be properly construed, the limitation “a

cradle structure adapted to receive a shaving head of a shaving apparatus” does not read on Rayovac’s accused products.

14. In my opinion, even assuming that Dr. Nayfeh’s opinions regarding the ‘556 patent were correct, Rayovac could redesign its products so as not to infringe the ‘556 patent. As discussed further below, Rayovac could (1) alter the design of its current products slightly and/or (2) offer for sale an air or CO<sub>2</sub> cleaning system developed at Rayovac.
15. In my opinion, even assuming that Dr. Nayfeh’s opinions regarding the ‘328 patent were correct, Rayovac could redesign its products so as not to infringe the ‘328 patent. As discussed further below, Rayovac could (1) alter the design of its current products slightly and/or (2) offer for sale an air or CO<sub>2</sub> cleaning system developed at Rayovac.
16. At trial, I anticipate giving a basic tutorial that will assist the Court and/or the jury in understanding the technology applicable to the patents in suit and the prior art.

### **III. Background**

#### **A. Rayovac’s Accused Cleaning Systems**

17. The Rayovac accused products I have studied are (1) the R-9500 cleaning system (rotary); (2) the R-5500/5700 cleaning system (foil); and (3) the WDF-7000CS (women’s foil). I understand that the R-5500 and R-5700

products differ only in features not pertinent to this suit. (Ex. 18, Chasen Dep., at 89-90.)<sup>1</sup>

18. The operation of the cleaning systems for Rayovac's accused products is essentially the same. Where there are differences pertinent to the asserted claim limitations, I have discussed them further below.
19. All of Rayovac's cleaning systems include an upper housing and a lower reservoir. (Ex. 18, Chasen Dep., at 85-90.) Cleaning fluid is manually poured from a bottle into the reservoir. (Ex. 18, Chasen Dep., at 20.)
20. During operation, the cleaning fluid is fed via a pump into a manifold. (Ex. 18, Chasen Dep., at 48.) Unlike the cleaning system in the patents in suit in which a shaver head is immersed in a bath, the cleaning fluid is injected via the manifold into the hair pocket. (Ex. 18, Chasen Dep., at 45.) This results in backflushing of the dirt and hair inside the hair pocket. The cleaning fluid then drains out of the hair pocket. (Ex. 18, Chasen Dep., at 63.) The drained cleaning fluid is then channeled via a basin to drain into a filter and then back into the reservoir. (Ex. 18, Chasen Dep., at 64, 87.)
21. Following cleaning, drying occurs with a fan. (Ex. 18, Chasen Dep., at 87-88.)

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<sup>1</sup> In this report, I cite to the testimony of Mr. Chasen regarding Rayovac's accused products. I have confirmed that cited portions of Mr. Chasen's testimony are accurate by reviewing Rayovac's actual products, internal Rayovac documents listed at Tab 2, and Rayovac's public product literature listed at Tab 2. I expect to rely upon Rayovac's products and documents at trial.

**B. Level of Ordinary Skill in the Art**

22. I incorporate by reference my discussion of the level of ordinary skill in the art presented at Paragraphs 31-40 of my First Expert Report.

**IV. DETAILED CONCLUSIONS FOR THE PATENTS IN SUIT**

**A. NON-INFRINGEMENT**

23. I understand that the literal infringement analysis is a two-step process. I understand that the first step involves the Court providing instruction as to the meaning of claim limitations disputed by the parties, and that this process is called "claim construction." I have reviewed the briefs submitted by the parties regarding claim construction and the transcript of the "Markman Hearing." I understand that these documents reflect the process by which the Court arrived at tentative claim constructions for several claim limitations discussed below.
24. I also understand that the second step involves comparing the accused product or process to the claim limitations as construed by the Court. I further understand that, in order to infringe an asserted patent claim literally, an accused product or process must meet each and every element of the asserted claim.
25. I finally understand that, even if a patent claim is not infringed literally, the patent claim may still be infringed under the "doctrine of equivalents" if the only differences between the element or elements of a patent claim and an accused device are insubstantial. In his expert report, Dr. Nayfeh has not asserted that any asserted claim of the patents in suit has been infringed by Rayovac under the doctrine of equivalents. To the extent that



Braun is permitted to present any doctrine-of-equivalents theory, I reserve the right to analyze it and respond.

**THE '556 PATENT**

**CLAIM 1**

26. It is my opinion that Rayovac has not infringed claim 1 of the '556 patent.
  - a. **“a cradle structure adapted to receive therein the shaving head”**
27. I understand that the Court has tentatively construed the element “a cradle structure adapted to receive therein the shaving head” to mean “a structure adapted to support or receive a shaving head of a shaving apparatus and able to receive or retain fluid or both.” It is my opinion that the Court’s construction should be modified. In my opinion, one of ordinary skill in the art would understand the claim element to mean “a structure adapted to support or receive a shaving head of a shaving apparatus and able to receive and retain fluid.”
28. For reasons set forth in detail at Paragraphs 50-54 of my First Expert Report, after reviewing the claims, the specification, and pertinent deposition testimony, the written description in the patents in suit is only for a cleaning system in which a shaver head is immersed in a bath held by the so-called “cradle structure.” Mr. Braun and Dr. Pahl neither conceived of nor described a cleaning system that operated in any other way. One of ordinary skill in the art would thus conclude that the claim element should be construed as set forth above.

29. Regardless of whether the Court modifies its tentative claim construction, I disagree with Dr. Nayfeh's opinion as to what constitutes the "cradle structure" in Rayovac's accused products.
30. As discussed above, in Rayovac's accused products, cleaning fluid is injected into the hair pocket. Specifically, in the R-9500 product, the shaver has three openings for injection of fluid. (Ex. 18, Chasen Dep., at 90.) In the R-5500/5700 product, the shaver has four openings for injection of cleaning fluid. (Ex. 18, Chasen Dep., at 90.) I also observed that the WDF-7000CS shaver has two openings for injection of the cleaning fluid. For all of the cleaning devices, the exterior of the manifold ends in injection nozzles.
31. As also described above, each of Rayovac's cleaning systems has a basin that channels fluid into the filter. The men's and women's foil products differ from the rotary product by having spring-loaded baskets for positioning the shaver.
32. Referring to the figures attached to Dr. Nayfeh's report, Dr. Nayfeh opines that the manifold "3a" (and its ports 3b) and what he calls the "supporting surfaces 3c" constitute the "cradle structure." (Nayfeh Report, at 8.)
33. Assuming the Court's tentative claim construction controls, in all of Rayovac's accused products, neither the manifold or its ports receive or provide any support for the shaver. Rather, it is the exterior surfaces of the injection nozzles and the "supporting surfaces 3c" that support the shaver. Moreover, the "supporting surfaces 3c" neither receive nor retain

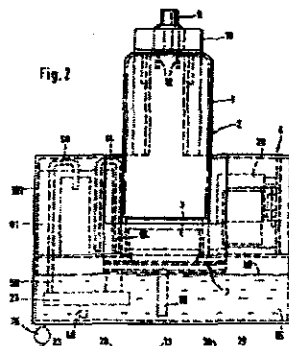
cleaning fluid. Thus, Rayovac's accused products do not have a "cradle structure" as construed by the Court.

34. I have reviewed the deposition testimony of Mr. Braun, who testified that the "conduits 64" in Figure 6 of the '556 patent were not part of the "cradle structure" he allegedly invented. (Ex. 16, Braun Dep., at 72-73.) Rather, the conduits allowed the cleaning fluid to be fed into the cradle structure to allow for the bathing of the shaver head. (Ex. 16, Braun Dep., at 72-73.) The manifold and its ports in Rayovac's accused products operate as the "conduits 64" except that fluid is not fed to anything constituting a "cradle structure." Consistent with the testimony of Mr. Braun, one of ordinary skill in the art would not find the manifold and its ports to be a "cradle structure," as construed by the Court.

35. Assuming the Court modifies its tentative claim construction to match what I believe would be understood by one of ordinary skill in the art, Rayovac's accused products also do not meet the "cradle structure" element. In Rayovac's accused products, the injection nozzles and "the supporting surfaces 3c" do not retain any cleaning fluid. More particularly, the exterior surfaces of the injection nozzles do not receive any cleaning fluid at all. (Ex. 18, Chasen Dep., at 86.) Likewise, the "supporting surfaces 3c" do not retain any cleaning fluid. Rather, the basin below the shaver channels cleaning fluid that has drained from the hair pocket into the filter. (Ex. 18, Chasen Dep., at 88.)

b. **"a cleaning fluid container separate from the cradle structure for holding a cleaning fluid"**

36. I understand that the Court has construed the element “a cleaning fluid container separate from the cradle structure for holding a cleaning fluid” to mean “a separate cleaning fluid container that is a removable cartridge which holds cleaning fluid.” It is my opinion that the Court’s construction of the element is correct. The ‘556 patent specification states that the invention of the ‘556 patent is a removable and replaceable cleaning fluid container with an integrated filter. (Ex. 13, ‘556 pat., at col. 1, ll. 63-66.) It is my opinion that a removable and replaceable cleaning-fluid container is a cartridge. I have also reviewed Dr. Pahl’s deposition testimony in which he provided his understanding that the “cleaning fluid container” referred to in the claims is a removable cartridge. (Ex. 14, Pahl Dep., at 87-88, 107-08.)
37. I further understand that the Court stated that it did not intend its construction to cover the “collecting reservoir 65” illustrated in Figure 2 of the ‘556 patent. Figure 2 of the ‘556 patent is reproduced immediately below.

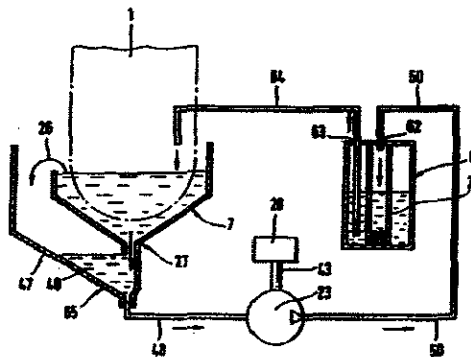


38. I disagree with Dr. Nayfeh that Rayovac's accused products meet the claim element, as properly construed by the Court. As discussed above, in Rayovac's accused products, cleaning fluid is poured from a bottle into a lower reservoir. Pouring fluid into a non-replaceable reservoir is very different from a removable cartridge that holds cleaning fluid, as described in the patents in suit and actually implemented in Braun's products. At best, the reservoir in Rayovac's accused products functions like the "collecting reservoir 65" in Figure 2 of the '556 patent.
39. An example that the ordinary artisan and lay people alike would understand is a gun. It is well known that placing a cartridge in a gun is quite different than manually loading a ball and powder into the gun. The same is true of Rayovac's accused devices.
40. It is thus my opinion that Rayovac's accused products do not meet this element.
- c. **"a fluid feed mechanism which feeds the cleaning fluid after it passes through the filter to the cradle structure during cleaning"**
41. It is my opinion that Rayovac's accused products do not meet this element for two reasons. First, the order of the fluid circuit in Rayovac's accused products does not meet the claim element. Second, in Rayovac's accused products, cleaning fluid is not fed to anything constituting a "cradle structure."
42. I understand that the parties have agreed that the claim element "a fluid feed mechanism which feeds the cleaning fluid after it passes through the filter to the cradle structure during cleaning" requires that "cleaning fluid

has to go from the pump to the filter and then to the cradle.” (Ex. 34, Markman Hearing Transcript, at 40.) I have also reviewed Braun’s Markman Reply Brief which states: “Indeed, it is clear from the claim language that the cleaning fluid is feed [sic] first to the filter.” (Ex. 35, Braun Markman Reply Brief, at 30.)

43. I agree that the claim language requires a sequence of fluid flow within the fluid circuit. Figure 6 of the ‘556 patent “shows schematically the fluid circuit” of the alleged invention of the ‘556 patent. (Ex. 13, ‘556 pat., at col. 7, l. 52.) In that fluid circuit, fluid flows from the “pump 23” to the “filter 24” and then to the “cradle 7.” Reproduced immediately below is Figure 6 of the ‘556 patent.

Fig. 6



44. I have also reviewed the testimony of Mr. Braun and Dr. Pahl. Consistently, Mr. Braun testified that the cleaning device of the ‘556 patent was specifically designed such that the filter would be on the pressure side of the pump in the fluid circuit, as in Figure 6 of the ‘556

patent. (Ex. 16, Braun Dep., at 84.) Likewise, Dr. Pahl testified that he considered it to be bad engineering to place the filter anywhere other than on the pressure side of the pump in his cleaning device. (Ex. 14, Pahl Dep., at 114-15.) It was not until Mr. Hoesser came to work at Braun in July 1995 that the filter was relocated to overcome design flaws in the Braun/Pahl fluid circuit. (Ex. 17, Hoesser Dep., at 107-08.) The testimony of Mr. Braun and Dr. Pahl supports my opinion that the agreed construction of the parties is correct.

45. In his report, Dr. Nayfeh states in a footnote: "Consistent with the claim language, I interpret this to mean that the claim requires that the fluid be fed to the cradle structure after the cleaning fluid passes through the filter. The particular order of fluid flow is not limited by the claim." The claim language and its agreed construction "from the pump to the filter and then to the cradle" denotes sequence. That would be clear to one of ordinary skill in the art as a matter of simple grammar. Indeed, Braun itself argued that it was clear that fluid was "first" fed to the filter.
46. Based upon the construction by the Court agreed to by the parties, it is my opinion that Rayovac's accused products do not meet the element. In particular, as recognized by Dr. Nayfeh, the filter in Rayovac's accused products is located underneath the basin. Fluid drains through the filter by the force of gravity.
47. Moreover, in Rayovac's accused products, cleaning fluid is not "fed" to anything constituting a "cradle structure." In Rayovac's accused products,

no fluid is ever “fed” to the “supporting surfaces 3c” at all. Rather, feeding of cleaning fluid occurs only when it is injected into the hair pocket. For reasons presented above, this backflushing process is very different from the bath of the cleaning device in the patents in suit. The injected fluid then simply drains via the force of gravity into the basin where it is channeled into the filter. In my opinion, the injection and drainage of the fluid into and out of the shaving head does not constitute the “feeding” of fluid to a “cradle structure.”

48. A simple example is washing a car with a garden hose. Water is, of course, sprayed on the car to wash off soap. By the force of gravity, the water eventually ends up on the driveway. Neither one of ordinary skill in the art nor a lay person would say that the water had been “fed” to the driveway. For similar reasons, it is my opinion that Rayovac’s accused products do not meet the claim element.

**d. “said container and filter being separable from the cradle structure as a unit”**

49. I understand that the Court has tentatively construed the element “said container and filter being separable from the cradle structure as a unit” to mean “the container and filter are integrally formed or assembled as a unit, such unit being removable from the cleaning device.” I further understand that “said container” refers to the removable cartridge discussed above. It is my opinion that the Court’s claim construction is correct, and I incorporate by reference my opinion that none of Rayovac’s accused products include a removable cartridge. It is also my opinion that



Rayovac's accused products do not meet the element, as properly construed by the Court.

50. First, in Rayovac's accused products, even if the reservoir were considered a cartridge, the filter and reservoir are not integrally formed.
51. Second, in Rayovac's accused products, there is no "cleaning device" without the lower reservoir. As shown in the third picture behind Tab B of Dr. Nayfeh's report, without the lower reservoir, there is only an unwieldy upper part with an exposed pump and legs. That upper part would not be regarded as a "cleaning device" by either one of ordinary skill in the art or a lay person.
52. Unlike Braun's commercial products in which the cleaning device exists separately from the removable and replaceable cleaning fluid cartridge, the only part of the Rayovac accused products that can be removed from the cleaning device is the filter. That fact is well illustrated insofar as a consumer can only purchase replacement filters (along with bottles of cleaning fluid) from Rayovac. (Ex. 36, Schoepp Dep., at 176.)
53. An analogy to the invention that Braun claimed is the ink-jet printer, a device which remains a printer after the removal of its cartridge. In comparison, without the lower reservoir in Rayovac's accused products, there is no cleaning device. Simply, the lower reservoir is an essential element of the "cleaning device" that provides physical support and the cosmetic appearance. It is therefore my opinion that Rayovac's accused products do not meet the element.

**CLAIM 2**

54. I understand that the Court has tentatively construed the element “the cleaning fluid container is comprised of two chambers, one chamber serving to hold the cleaning fluid, the other chamber being configured as a filter” to mean “the cleaning fluid container consists of two enclosed chambers. One chamber holds cleaning fluid, the other chamber is a filter.” It is my opinion that the Court’s claim construction is correct.
55. While I understand that Braun had at one time asserted this claim against Rayovac, I see no opinion from Dr. Nayfeh that claim 2 reads on Rayovac’s accused products. It is my opinion that Rayovac’s accused products do not meet claim 2.
56. Simply, in Rayovac’s accused products, the filter suspended in the lower reservoir is not an enclosed chamber. Rather, the filter is essentially an open bag that traps debris. From my review of the Markman Hearing transcript, I understand that Braun’s counsel stated that Rayovac’s accused products do not meet claim 2 as construed by the Court. (Ex. 34, Markman Hearing Transcript, at 42-43.) I agree with the statement of Braun’s counsel.

**CLAIM 6**

57. Claim 6 states: “A cleaning device as claimed in claim 1, wherein the cleaning fluid container contains ports through which cleaning fluid passes in and out of the cleaning fluid container.” I understand that this element was not construed by the Court.

58. Referring to Figure 1d of his report, Dr. Nayfeh concludes that the items labeled 13 and 15 on the picture are “ports” contained by the cleaning fluid container. (Nayfeh Report, at 9.) I disagree with Dr. Nayfeh for several reasons.
59. First, Dr. Nayfeh appears to assume that all openings are ports. It is true that all ports are openings, but one of ordinary skill in the art would understand that the converse is not true.
60. Second, item 13, the entrance to the filter, is not a port. Item 13 operates as the rim of a sink, and one of ordinary skill in the art would understand the rim of a sink is not a “port.” In all events, as accurately labeled by Dr. Nayfeh in Figure 1d, item 13 is part of the filter. It is not contained by the lower reservoir that Dr. Nayfeh calls the “cleaning fluid container.” It is therefore my opinion that item 13 does not meet the claim element.
61. Third, item 15 on Dr. Nayfeh’s Figure 1d is a clearance hole to allow the pump access to the liquid in the lower reservoir. Cleaning fluid neither passes in or out of the clearance hole. While the pump in Rayovac’s accused products has a suction port, that structure is not contained by the lower reservoir that Dr. Nayfeh calls the “cleaning fluid container.” It is therefore my opinion that item 15 likewise does not meet the claim element.

**CLAIM 18**

62. Claim 18 of the ‘556 patent states: “A cleaning device as claimed in claim 1, wherein the cradle structure is open towards atmosphere and is supplied

with cleaning fluid from the cleaning fluid container by means of the fluid feed mechanism.” I understand that, in order to infringe a dependent claim, all limitations of the independent claim must be met by the accused device.

63. Claim 18 of the ‘556 patent depends from claim 1. As set forth above, it is my opinion that claim 1 of the ‘556 patent has not been infringed by Rayovac. It is thus also my opinion that claim 18 of the ‘556 patent has not been infringed by Rayovac.

#### **THE ‘328 PATENT**

64. It is my opinion that Rayovac has not infringed any asserted claim of the ‘328 patent.

#### **CLAIM 11**

- a. **“a cradle structure adapted to receive a shaving head of a shaving apparatus”**

65. I understand that the Court has tentatively construed the element “a cradle structure adapted to receive a shaving head of a shaving apparatus” to mean “a structure adapted to support or receive a shaving head of a shaving apparatus and able to receive or retain fluid or both.” I further understand that the Court’s tentative construction is identical to the tentative construction for the similar element in the ‘556 patent.
66. As set forth at Paragraphs 26-35, I thus incorporate by reference my discussion of my opinion that the Court’s tentative claim construction

should be modified and my discussion of the limitation, as construed by the Court, and opinion that Rayovac's accused products do not infringe.

**b. "a feed device for feeding cleaning fluid to said cradle structure"**

67. I understand that the Court has construed the element "a feed device for feeding cleaning fluid to said cradle structure" to mean "a mechanism that feeds cleaning fluid from the cleaning fluid container to the cradle structure."
68. Unlike the '556 patent, this claim element does not require that cleaning fluid be fed from the pump to the filter and then to the cradle. However, it still does require that the feed device "feed" cleaning fluid to the "cradle structure."
69. For reasons set forth at paragraphs 41-48, in Rayovac's accused products, cleaning fluid is not "fed" to the "supporting structures 3c."
70. In Rayovac's accused products, no fluid is ever "fed" to the "supporting surfaces 3c" at all. Rather, feeding of cleaning fluid occurs only when it is injected into the hair pocket. For reasons presented above, this backflushing process is very different from the bath of the cleaning device in the patents in suit. As discussed above, the injected fluid then simply drains via the force of gravity into the basin where it is channeled into the filter.

**CLAIM 12**

71. Claim 12 of the '328 patent states: "A device as claimed in claim 11, wherein the drying device comprises an impeller." I understand that, in

order to infringe a dependent claim, all limitations of the independent claim must be met by the accused device.

72. Claim 12 of the '328 patent depends from claim 11. As set forth above, it is my opinion that claim 11 of the '328 patent has not been infringed by Rayovac. It is thus also my opinion that claim 12 of the '328 patent has not been infringed by Rayovac.

#### **CLAIM 14**

73. For claim 14 of the '328 patent, the limitations "a cradle structure adapted to receive a shaving head of a shaving apparatus" and "a feed device for feeding cleaning fluid to said cradle structure" are identical to claim 11 of the '328 patent. I thus incorporate by reference my discussion and opinions that Rayovac's accused products do not infringe for those limitations set forth at Paragraphs 65-70. I likewise incorporate by reference my opinion that the Court's tentative construction of the "cradle structure" limitation should be modified.

c. **"said cradle structure being permanently open to atmosphere"**

74. I understand that the Court has construed the element "said cradle structure being permanently open to atmosphere" to mean that the "cradle structure" is permanently open to the air.
75. Assuming that Dr. Nayfeh were correct that the manifold and its ports in Rayovac's accused products are part of the "cradle structure," it is my opinion that Rayovac's accused products do not meet the element above. When a shaver has been placed in Rayovac's cleaning device, the

manifold and its ports are not permanently open to the air. Rather, they are open to the interior of the shaving head and filled with fluid during the cleaning of the shaver. Thus, the manifold and its ports are not permanently open to the air.

76. Dr. Nayfeh also opines that the “supporting surfaces 3c” are part of the “cradle structure.” Assuming that were true, the “supporting surfaces 3c” are not permanently open to the air. Rather, during use the “supporting surfaces 3c” are closed to air by contact with the shaver.
77. It is thus my opinion that Claim 14 does not read on Rayovac’s accused products.

#### **CLAIM 18**

78. For claim 18 of the ‘328 patent, the limitations “a cradle structure adapted to receive a shaving head of a shaving apparatus” and “a feed device for feeding cleaning fluid to said cradle structure” are identical to claim 11 of the ‘328 patent. I thus incorporate by reference my discussion and opinions that Rayovac’s accused products do not infringe for those limitations set forth at Paragraphs 65-70. I likewise incorporate by reference my opinion that the Court’s tentative construction of the “cradle structure” limitation should be modified.

#### **B. ACCEPTABLE NON-INFRINGEMENT SUBSTITUTES**

79. I understand that in order to obtain lost profits as damages a patentee must prove the absence of acceptable non-infringing substitutes. I further understand that an acceptable non-infringing substitute need not be on the

market if the non-infringing substitute would have been readily available during the period of infringement. I also understand that a non-infringing substitute is readily available if an alleged infringer has all of the necessary equipment, know-how, and experience to make the non-infringing substitute.

80. Assuming that all of the opinions of Dr. Nayfeh are correct, I have thus analyzed whether there are acceptable non-infringing substitutes for the asserted patent claims.

#### **'556 AND '328 PATENTS**

81. The patents in suit are both limited to cleaning systems that use a liquid for cleaning. The '328 patent, in fact, explicitly distinguishes the French '111 patent insofar as that cleaning system used a gas for cleaning. (Ex. 15, '328 pat., at col. 1, ll. 59-67.) I also have reviewed Braun's Markman Reply Brief, (Ex. 35), where it acknowledges that the '328 patent cannot cover gas cleaning systems.
82. I have reviewed numerous Rayovac documents located at the "Bates Ranges" R010572 - R010952. (Ex. 37) These documents show that Rayovac -- more specifically James Chasen -- has developed two gas cleaning systems resembling Rayovac's current liquid cleaning system. The first gas cleaning system employs a compressor to blow air into the hair pocket and then with the dirt and hair out into a filter. (Ex. 37. R010934-38.) The second gas cleaning system employs CO<sub>2</sub> cartridges to force CO<sub>2</sub> into the interior of the shaving head, also blowing the dirt out



into a filter. (Ex. 37; R010599; R010791-801.) Based upon my review of the documents and discussions I have had with Mr. Chasen, both of his gas cleaning systems have proven to be effective in cleaning dirty shaving heads.

83. It is thus my opinion that the two gas cleaning systems developed by Mr. Chasen are acceptable non-infringing substitutes for both of the patents in suit. While Mr. Chasen's systems are not on the market, the mechanical design for both systems is complete. In the case of Rayovac's liquid cleaning system, for the foil product, Rayovac was able to introduce this product in a matter of months after the design was complete. (Ex. 18, Chasen Dep., at 73-74.) Rayovac thus has the ability and know-how to bring a completed design to market quickly.

### **THE '556 PATENT**

#### **Claims 1, 2, 6 and 18**

84. As discussed above, the last element of the '556 patent requires that "said container and filter being separable from the cradle structure as a unit." The Court construed this element to mean that "the container and filter are integrally formed or assembled as a unit, such unit being removable from the cleaning device."
85. Referring to Figures 1b, 2b, and 3b of his report, Dr. Nayfeh opines that "the filter 12 and container 5 are assembled as a unit in that filter 12 is assembled to container 5." (Nayfeh Report, at 9.) Dr. Nayfeh thus relies

upon the fact that the filter in Rayovac's accused devices rests by the forces of gravity and friction upon the lower reservoir.

86. Assuming that Dr. Nayfeh were correct that Rayovac has infringed claim 1 of the '556 patent (but he is not), Rayovac would only need to slightly modify its existing cleaning system to avoid infringement of the '556 patent. Rather than have the filter rest on the lower reservoir, Rayovac could instead removably latch the filter to the bottom of the what Dr. Nayfeh calls the "housing 2." The "housing 2" (now attached to the filter) would still be separable from the lower reservoir. To allow consumer replacement of the filter, there could be buttons to release the latches on the filter. Following detachment of a spent filter, a consumer would simply insert the new filter, much as is done with Rayovac's current products.
87. The non-infringing substitute described immediately above is readily available to Rayovac. Rayovac would only need to modify its existing design slightly, and it has the engineering resources to do so. The modification would also require very little additional materials. It is thus my opinion that there is another acceptable non-infringing alternative to all asserted claims of the '556 patent.

**THE '328 PATENT**

**Claim 11**

88. Claim 11 of the '328 patent requires a "drying device." To the extent that Dr. Nayfeh argues that the drain and siphon of the McKiney and Maatz References presented in my First Expert Report are not "drying devices," there is an acceptable non-infringing alternative to claim 11 of the '328 patent.
89. More specifically, I have reviewed the testimony of Mr. Juergen Hoeser. Mr. Hoeser testified that Braun currently sells a liquid cleaning system in which the shaver is dried passively after the bath is drained from Braun's "cradle structure." (Ex. 17, Hoeser Dep., at 112.) By passive drying, I understand Mr. Hoeser to mean air drying. (Ex. 17, Hoeser Dep., at 112.)
90. Assuming that Dr. Nayfeh were correct that Rayovac has infringed claim 11 of the '328 patent (but he is not), there is an acceptable non-infringing alternative available to Rayovac. Simply, like the commercial product that Braun has on the market, it is my opinion that Rayovac could remove its fan and sell a cleaning system that employs air drying.

**Claim 12**

91. Claim 12 of the '328 patent states: "A device as claimed in claim 11, wherein the drying device comprises an impeller." I understand that the Court has construed the term "impeller" to mean "a rotating device or member of a turbine, blower, fan, axial or centrifugal pump."

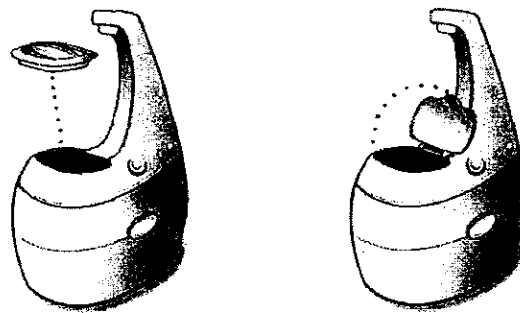
92. Claim 13 of the '328 patent further states: "A device as claimed in claim 12, wherein the drying device further comprises a heater." Because claim 13 depends from claim 12, Braun has no claim in the '328 patent that specifically identifies a heater alone as the claimed "drying device."
93. Thus, to the extent that I am at least correct in my opinion that claim 11 of the '328 patent is anticipated and/or obvious, Rayovac possesses an acceptable non-infringing alternative to claim 12 of the '328 patent. More specifically, Rayovac could redesign its existing liquid cleaning system to use solely a heater for drying.
94. More specifically, I have reviewed the testimony of Mr. Juergen Hoeser. In addition to the passive drying product, Mr. Hoeser testified that Braun currently sells a liquid cleaning system in which the shaver is dried by induction heating after the bath is drained from Braun's "cradle structure." (Ex. 17, Hoeser Dep., at 112.)
95. Assuming that Dr. Nayfeh were correct that Rayovac has infringed claim 12 of the '328 patent (but he is not), there is an acceptable non-infringing alternative available to Rayovac. Simply, like the commercial product that Braun has on the market, it is my opinion that Rayovac could remove its fan and sell a cleaning system that employs induction heating.

**Claim 14**

96. As discussed above, claim 14 of the '328 patent requires "said cradle structure being permanently open to the atmosphere." As also discussed

above, Dr. Nayfeh concludes that the “manifold 3a with ports 3b” and “supporting structures 3c” constitute the claimed “cradle structure.”

97. Assuming that Dr. Nayfeh were correct that Rayovac has infringed claim 14 of the '328 patent (but he is not), there is an acceptable non-infringing substitute available to Rayovac. More specifically, Rayovac could slightly modify the existing design of its liquid cleaning system to avoid infringement of claim 14.
98. To do so, for periods where the shaver was not being cleaned or charged, Rayovac could incorporate a plastic cover on the top of the opening in its cleaning device. Rayovac might do so to minimize (1) the evaporation of cleaning fluid in the lower reservoir and (2) the likelihood of cleaning fluid spillage. Rayovac could accomplish this with (1) a fully removable plastic cover or (2) a hinged plastic cover comparable to a toilet seat. Pictorial representations of these acceptable non-infringing substitutes are reproduced immediately below.



99. The non-infringing substitutes shown immediately above are readily available to Rayovac. Rayovac would only need to modify its existing

design slightly, and it has the engineering resources to do so. The modification would also require very little additional materials. It is thus my opinion that there is another acceptable non-infringing alternative to all asserted claims of the '556 patent.

**Claim 18**

100. Claim 18 of the '328 patent requires "a bracket for insertion of the shaving apparatus therein." I understand the Court has construed the term "bracket" to mean "a bracket or projecting support."
101. Referring to Figures 1a, 2b, and 3a of his expert report, Dr. Nayfeh opines that "a vertically extending structure 10 and an overhanging projection 11 into which the electric shaver 1 is inserted" constitute a bracket as claimed. Assuming that Dr. Nayfeh were correct that Rayovac has infringed claim 18 of the '328 patent (but he is not), there is an acceptable non-infringing substitute available to Rayovac.
102. More specifically, I have reviewed the testimony of Mr. Juergen Hoeser. In Braun's first generation liquid cleaning system, the cleaning system included a bracket that Braun internally classified as "a dome." (Ex. 17, Hoeser Dep., at 11.) For both the passive drying product and the induction heater product, Mr. Hoeser testified further that Braun eliminated the dome. (Ex. 17, Hoeser Dep., at 17.) Braun did so by increasing the depth of what it calls the "cradle structure." (Ex. 17, Hoeser Dep., at 11.)
103. Assuming that Dr. Nayfeh were correct that Rayovac has infringed claim 18 of the '328 patent (but he is not), there is an acceptable non-infringing

alternative available to Rayovac. Simply, like the commercial product that Braun has on the market, it is my opinion that Rayovac could increase the depth of its "cradle" and eliminate the "extending structure 10 and overhanging projection 11."

The opinions in this report are rendered on the basis of a reasonable degree of engineering certainty and are subject to modification and amendment as new information becomes available.

Dated: June 13, 2005

  
Samuel R. Phillips, PE

**TAB 1**



5 Joaquin Road  
Portola Valley, California  
94028-8114, USA

**SAMUEL R. PHILLIPS, PE, CMC**  
CONSULTING ENGINEER

p (650) 851-4628  
f (650) 851-5546  
srp@jps.net

## **CURRICULUM VITAE**

June 12, 2004

### **LITIGATION EXPERIENCE**

- Patent infringement
- Theft of trade secrets
- Contract dispute
- Fraud
- Class action
- Product liability

### **EXPERTISE**

- Computers and peripherals
- Electrical connectors; wire and cable; high voltage
- Electronics manufacturing
- Engineering and manufacturing management
- Fluid machinery: flow, vacuum, bearings, and seals
- Heat transfer
- Lasers and optics
- Machine design
- Manufacturing-cost management
- Manufacturing-process development
- Materials: metals, plastics, glass, and ceramics
- Mechanical engineering
- Medical and scientific instruments, and cryogenics
- New-product introduction
- Product and industrial design
- Stress and vibration
- Test and reliability

### **INDUSTRY EXPERIENCE**

- Chemical-process equipment
- Consulting and finance
- Data-storage equipment
- Document-handling equipment
- Instruments
- Lasers and optics
- Medical and laboratory equipment
- Semiconductor equipment
- Telecommunications equipment
- General manufacturing

**SAMUEL R. PHILLIPS**  
CONSULTING ENGINEER

## **EMPLOYMENT HISTORY**

1985 to     Independent Consultant, Portola Valley, California  
Present

Consultant in engineering, manufacturing, and management to more than 120 clients. Representative achievements include the following:

### **Engineering and Manufacturing**

- Developed and introduced to production the first mass-produced product to use the diode laser. Pioneered the one-man alignment laser, marketed worldwide by Nikon.
- Analyzed manufacturing yields and guided wide-ranging design changes to improve manufacturing and reliability of implantable artificial heart.
- Designed plastic submersible pump which achieved #1 market share through Sears, Roebuck. Half the cost of competitive models. Patented.
- Designed ultrasonically-welded plastic cassettes for analytical gel. Cassettes met stringent criteria for flatness and cost.
- Improved cooling and thermal stability of analytical instruments, to  $\pm 0.1^\circ \text{C}$ , setting new standards of analytical accuracy.
- Investigated engineering and manufacturing operations of new ventures in due-diligence teams on behalf of investors.
- Created and taught course in materials and processes to graduate and undergraduate students of product and industrial design.
- Designed cryogenic probe to treat prostate cancer using minimally-invasive surgery.
- Developed high-voltage high-power resistive divider for fusion-energy research. Operated trouble-free at national laboratory for last ten years.

### **Management**

- Developed new-product introduction procedures for company experiencing growing pains. Recruited and staffed key engineering positions.
- Established and installed engineering-change (ECO) procedures which eliminated production bottlenecks typical of fast-growing companies.
- Surveyed operations of plant fabricating heavy steel structures. The recommended changes returned the plant to profitability.
- Advised data-communication-equipment manufacturer on restructuring the engineering and manufacturing departments following acquisition of a company twice its size.
- Coached senior vice president of prominent disk-drive manufacturer on company-wide strategies for cost management.

**SAMUEL R. PHILLIPS**  
CONSULTING ENGINEER

- Served as interim Vice President of Manufacturing, Manufacturing Manager, Manufacturing Engineering Manager, Vice President of Engineering, Engineering Manager, or Project Manager for companies in startup or transition.
  - In a "get-well" team, helped manufacturer of packaging machinery introduce effective systems to operate the engineering and manufacturing departments and respond to orders.
- 1995 to 1997 Academy of Art College, San Francisco, California  
Adjunct Instructor, Department of Product and Industrial Design  
Instructor in materials and processes
- 1992 to 1997 Russian-US Synergies, Saratoga, California  
Director  
Co-founder and manager, engaging scientists and engineers to work on American projects in Russia
- 1983 to 1985 RPC Industries, Hayward, California
- 1984-85 Vice President, Manufacturing  
Responsible for two manufacturing plants, including materials, production, and test of high-voltage equipment for industrial processing and research.
- 1983-84 Vice President, Engineering  
Responsible for designing high-voltage equipment for industrial processing. Supervised research office at Plasma Physics Laboratory, Princeton University, operated for US Department of Energy.
- 1976 to 1983 Spectra-Physics, San Jose, California
- 1982-83 Manager of Manufacturing Engineering  
Industrial Laser Division  
Responsible for production and industrial engineering and tooling of lasers for welding and cutting.
- 1980-82 Manager of Manufacturing Engineering  
Construction Systems Division  
Responsible for production and industrial engineering and tooling of construction-alignment lasers.

**SAMUEL R. PHILLIPS**  
CONSULTING ENGINEER

- 1976-80    **Engineering Section Manager**  
            **Construction Systems Division**  
            Responsible for designing construction-alignment lasers.
- 1972 to    **Raychem, Menlo Park, California**  
1976       **Manager, Application Equipment**  
            Responsible for design and manufacture of equipment for heating or cooling heat-shrink-  
            able products made of polymers and metal alloys.
- 1971 to    **Arkon Scientific Laboratories, Berkeley, California**  
1972       **Manager of Electromechanical Applications**  
            Responsible for design and manufacture of infra-red spectrophotometers and of compo-  
            nents of the artificial heart.
- 1970 to    **Houdaille Industries, Buffalo, New York**  
1971       **Vice President, Engineering, Penberthy Division, Prophetstown, Illinois**  
            Responsible for design of valves, gages, and centrifugal and jet pumps.
- 1967 to    **Garrett, Los Angeles, California**  
1970       **Staff Engineer, AiResearch Industrial Division**  
            Responsible for design of turbochargers, gas turbines, and heat exchangers.
- 1959 to    **Cosmodyne, Torrance, California**  
1967       **Assistant Chief Engineer, Project Engineer, and Development Engineer**  
            Responsible for design of pumps, heat exchangers, and piping systems for liquid oxygen  
            and liquid hydrogen.
- 1957 to    **Joy Manufacturing, Pittsburgh, Pennsylvania**  
1959
- 1958-59    **Development Engineer, Baash-Ross Division, Houston, Texas**  
                    Responsible for design of oil-field drilling equipment.
- 1957-58    **Corporate Management Trainee**  
                    Trained at plants and offices in compressors, mining machinery, and oil-field  
                    drilling equipment.

**EDUCATION**

- Master of Science, Mechanical Engineering, California Institute of Technology, 1957
- Bachelor of Science, Engineering, California Institute of Technology, 1956
- Postgraduate studies in accounting, engineering, and management

**SAMUEL R. PHILLIPS**  
CONSULTING ENGINEER

#### RECENT PUBLICATIONS

- "Getting the Most from a Conference" *C2M: Consulting to Management*, pp. 14-18, June, 2004
- "What is an Inventor's Fair Share?" *Machine Design*, p. 163, October 26, 1995

#### PATENTS

- |                |  |      |
|----------------|--|------|
| • US 6,270,732 | Particle Collection Apparatus . . .      | 2001 |
| • WO 01/07155  | Particle Production Apparatus            | 2001 |
| • WO 00/00312  | Particle Collection Apparatus . . .      | 2000 |
| • US 3,822,967 | Sump Pump                                | 1974 |
| • US 3,037,803 | Traveling Block with Variable Air Spring | 1962 |
| • US 3,032,364 | Swivelled Hook for a Traveling Block     | 1962 |

#### CERTIFICATIONS

- Registered Professional Engineer—California (M12231)
- Registered Professional Engineer (inactive)—Illinois (62-29083) and Texas (32635)
- Certified Management Consultant—Institute of Management Consultants
- Certified Member (Hon.)—National Bureau of Certified Consultants
- Commercial pilot, instrument-rated
  - Airplane, single engine, land and sea
  - Airplane, multi-engine, land
  - Federal Aviation Administration Certification 1490325
- Department of Defense Secret clearance (inactive)

#### HONORS AND ASSOCIATIONS

- American Society of Mechanical Engineers: Life Member
- California Institute of Technology: Institute Scholar and Teaching Assistant
- Forensic Expert Witness Association: Member
- Institute of Management Consultants: Annual Confab Committee
- Optical Society of Northern California: Member
- Order of the Engineer: Member
- Professional and Technical Consultants Association: Senior Member, Past President
- *R&D Magazine*: "R&D 100" Annual Awards Judge
- Society of Manufacturing Engineers: Senior Member

In the last four years I, Samuel Phillips, have testified in deposition or trial as follows:

1. *Weekend Warrior Trailers, Inc. v. Thor California, Inc.*, US District Court, Los Angeles; deposition May 2005.
2. *CFM Corp. v. Dimplex North America Ltd.*, US District Court, Chicago; deposition, trial March 2005.
3. *Applica Consumer Products, Inc., et al. v. Tilia, Inc.*, CPR Institute for Dispute Resolution, San Francisco; arbitration September 2004.
4. *PLH Products, Inc. v. Saunas R Us, Inc., et al.*, Superior Court, Pomona, California; deposition and trial June 2004.
5. *Packaging Aids Corp. v. Shawn Kennedy et al.*, District Court, Ft. Worth, Texas; deposition, trial May 2004.
6. *Certain Home Vacuum Packaging Machines*, US International Trade Commission; deposition March 2004.
7. *Systems Division, Inc. v. Teknek Electronics, Ltd., et al.*, US District Court, Santa Ana; deposition, trial July 2004.
8. *Illinois Tool Works Inc. v. Powers Fasteners, Inc.*, US District Court, Chicago; deposition, hearing March 2003.
9. *Arris International et al. v. John Mezzalingua Associates, Inc.*, US District Court, Denver; deposition November 2002.
10. *Semitool, Inc. v. Tokyo Electron America, Inc., et al.*, US District Court, Oakland; deposition October and November 2002.
11. *Gilbert Sanchez v. Scientific Platers, Inc., et al.*, Superior Court, Oakland, California; arbitration May 2005.

**TAB 2**

## **LIST OF INFORMATION CONSIDERED**

U.S. Patent No. 5,649,556 to Braun *et.al*

U.S. Patent No. 5,711,328 to Braun *et.al*

Pahl Deposition Transcript

Braun Deposition Transcript

Hoeser Deposition Transcript

Chasen Deposition Transcript

Schoepp Deposition Transcript

Transcript of Markman Hearing, March 15, 2005.

Braun Markman Reply Brief

Rayovac "Air Cleaning System"  
Documents, Bates Nos. R010572-952

The R-9500 Cleaning System

The R-5500/5700 Cleaning Systems

The WDF-7000CS Cleaning System

The user manuals that accompanied the  
R-9500, R-5500/5700, and WDF-7000CS  
Cleaning System products

Discussions with James Chasen



**TAB 3**

**LIST OF EXHIBITS**

- |  |   |
|--|---|
| 1. U.S. Patent No. 1,868,904 to Johnson        | 20. U.S. Patent No. 3,890,988 to Lee                                |
| 2. U.S. Patent No. 1,938,159 to Stewart        | 21. U.S. Patent No. 4,815,486 to Shinn                              |
| 3. U.S. Patent No. 2,447,183 to Irish et.al    | 22. U.S. Patent No. 5,335,394 to Cunningham                         |
| 4. U.S. Patent No. 2,441,229 to Schultz        | 23. Braun Invention Disclosure                                      |
| 5. U.S. Patent No. 2,788,536 to Loeffler       | 24. TransPerfect Translation  |
| 6. U.S. Patent No. 2,976,552 to Loeffler       | 25. English to German Dictionary                                    |
| 7. U.S. Patent No. 3,172,146 to Simmons        | 26. German to English Dictionary                                    |
| 8. U.S. Patent No. 3,365,267 to Mekiney, et.al | 27. Braun's Responses to Rayovac's Interrogatories                  |
| 9. U.S. Patent No. 3,478,758 to Davies         | 28. Smetana Deposition Transcript                                   |
| 10. U.S. Patent No. 3,500,840 to Maatz         | 29. Smetana Memorandum  |
| 11. Braun Timeline                             | 30. Stiegler Memorandum   |
| 12. '328 Patent File History                   | 31. Zeischke Thesis   |
| 13. U.S. Patent No. 5,649,556 to Braun et.al   | 32. U.S. Patent No. 5,076,306 to Suzuki                             |
| 14. Pahl Deposition Transcript                 | 33. U.S. Patent No. 4,480,394 to Salas                              |
| 15. U.S. Patent No. 5,711,328 to Braun et.al   | 34. Markman Hearing Transcript, March 15, 2005                      |
| 16. Braun Deposition Transcript                | 35. Braun Markman Reply Brief                                       |
| 17. Hoeser Deposition Transcript               | 36. Schoepp Deposition Transcript                                   |
| 18. Chasen Deposition Transcript               | 37. Rayovac "Air Cleaning System" Documents, Bates Nos. R010572-952 |
| 19. '556 Patent File History                   |   |